Vol. 3, Issue 7 Spring 2000

News NOB

Newsletter for Members of the Nevada Test Site Historical Foundation

INSIDE THIS ISSUE:

Collector's Edition

NTS 50th Anniversary Calendar Available

Copies of a one-of-a-kind, full-color commemorative year 2000 calendar highlighting 50 years of the Nevada Test Site remain available at the NTS History Center gift shop for $15 (see page 5). If you wish to order by mail see the memorabilia order form on page 13 of this issue of the *News Nob*. Order forms can also be obtained by calling 295-1198 and leaving the following information: Your name, address, and phone number.

NTS Historical Foundation Gains Smithsonian Affiliation!

The Nevada Test Site Historical Foundation has achieved a major milestone in gaining affiliation status with the Smithsonian Institution of Washington, D.C., on April 5, 2000. Foundation Board of Trustees Chairman Troy Wade signed a memorandum of understanding for affiliation with the Smithsonian. According to Wade, "The Smithsonian affiliation certainly adds to the Foundation's stature, and will help us in our mission to preserve the NTS history as part of the nation's heritage."

Under the terms of the agreement, both entities can exchange objects of historical significance that would add to their respective exhibits and archives. The NTS Historical Foundation, as part of the planned Nevada Atomic Testing History Institute, would seek from the Smithsonian exhibits and materials related to the Cold War era, the nuclear age, and other nuclear testing-related items.

Wade, with assistance from Loretta Helling of the U.S. Department of Energy, has been working with Smithsonian representatives over the last few months to gain the affiliate status. First, the Smithsonian accepted a proposal from the Foundation, and then both institutions developed the memorandum of understanding. The memorandum of understanding allows for both organizations to fully explore needs and costs associated with the affiliation.

"This is where we and the Smithsonian negotiate any long-term loan of artifacts," adds Wade. "We would use what they might have that would be of benefit to our patrons, and they would do likewise."

The Nevada Atomic Testing History Institute is a joint venture of the Nevada Test Site Historical Foundation, Desert Research Institute (DRI) and the U.S. Department of Energy. The 59,000-square-foot facility is scheduled to open to the public in the latter part of 2001 on Flamingo Road on the DRI Campus in Las Vegas. Currently, the Foundation operates a small NTS History Center at 2521 Losee Road, Building B-3, in North Las Vegas, Nevada. It is open every Tuesday and Wednesday from 12:00 to 4:30 p.m.

NTS Historical Foundation Board of Trustees Chairman, Troy Wade (seated, front center), signs the Foundation's new memorandum of understanding for Foundation affiliation with the Smithsonian Institution. Nevada State Senator Dina Titus (standing, behind Wade) and other Board members look on.

PRESIDENT'S CORNER

I was so impressed with the message presented to us by our keynote speaker, Bob Kuckuck, at our annual Foundation Membership meeting last fall, that I have been urging Bob to make his speech available to print in the *News Nob* so that we could convey his message to those who could not attend the annual meeting.

Bob has managed to find time in his busy schedule to do that, and I am presenting it to you as this issue's "President's Corner," as I believe it eloquently describes the rationale for the historical nuclear testing program in which so many of us participated. Bob concludes with a perspective on where the current U.S. nuclear testing program stands, as a continuation of the legacy of national capability established by Nevada Test Site workers over the past 50 years.

Many thanks to Bob for putting pen to paper. I hope you enjoy reading his presentation as much as I enjoyed listening to it last fall.

Warm Regards,

Bruce W. Church

The Role of Nuclear Testing in Developing and Maintaining the U.S. Stockpile

Robert W. Kuckuck
Deputy Director for Operations
Lawrence Livermore National Laboratory

A question often asked today, particularly in discussions surrounding the pros and cons of a Comprehensive Test Ban Treaty, is "what role has nuclear testing played in the development and maintenance of the U.S. nuclear weapons stockpile?" The complete answer is of course, complex, lengthy, and in some cases classified. However, I will attempt here to offer a brief discussion of some of the key accomplishments, shortcomings, and issues surrounding nuclear testing and our stockpile. In fact, I will try to give a short overview of three specific topics:

- Why we needed to test in the first place
- What we did and did not accomplish with our testing
- Can we continue without further testing

Why we needed to test in the first place.

The reason for nuclear testing is quite simply that we didn't, and to some degree still don't, know precisely how nuclear weapons work. The major principles were of course understood, but the minute details were and continue to be elusive. When a weapon of a certain type was tested and shown to work, new ones were extrapolated from the successful design. But everything had to be tested before it could be depended upon. Computer codes used to predict the performance of the explosion could not be written using just fundamental physical laws and mathematical equations. Rather, arbitrary physics approximations were put into the equations to obtain answers that agreed with previous test results. No one knew with complete certainty the validity range for these approximations or what, if any, small changes could be made to the design without causing the explosion to malfunction, or even not occur at all.

This situation is not surprising when one considers the complexity of the materials and processes that go on in a nuclear explosion. First of all, the materials are not at all common— uranium, plutonium, tritium, deuterium, high explosives, etc. Many of these are volatile and radioactive. Dimensions of the parts must be extremely precise, surface conditions well-known, material and gas purities high, and fabrication exact. When the high explosive is ignited, the dimensions and material conditions change in microseconds, temperatures rise to hundreds of millions of degrees, solid materials change into liquids, materials move around at millions of miles-per-hour inside the bomb, and neutrons, x-rays, electrons and gamma rays flood the entire assembly. The critical explosion processes take place in only a few billionths of a second. No surprise then, it is impossible to calculate, model, and predict all of this with great accuracy and confidence. And this is just for a single explosion. To predict the performance of a modern thermonuclear or "hydrogen" bomb, you would have to model all of the above for the primary stage, and then do it again for the secondary stage, plus model how the energy got from one stage to the other.

So, the manner in which Laboratory scientists created our existing stockpile was one in which the nuclear explosives were tested

(Continued on page 4)

PROFILES

Robert J. Agonia

Bob, a new member of the Board of Trustees, was most recently confirmed by the Board of Trustees as Vice President.

Bob's tenure with the Department of Energy dates back to January 1974 when he joined the Atomic Energy Commission's Nevada Operations Office. His prior federal service includes a 2-year stint with the Peace Corps in El Salvador and some 8 years with the Internal Revenue Service in the Los Angeles, San Francisco, and Reno District Offices.

Bob initially served as an Affirmative Action Officer for the AEC. In 1980, he was reassigned as a Branch Chief, Office of Industrial Relations. While experiencing numerous reorganizations and title changes, Bob's assignments are essentially unchanged — contractor human resources and labor relations are the focus of his day-to-day activities.

A resident of Las Vegas since 1968, Bob is active in many community organizations, and his record of community service is quite extensive. He was one of the founders of the Hispanic Employment Program (HEP) the Minority Engineering Program at UNLV, and the school district's JASON program.

Bob is married to Barbara, a retired professor from the Community College (CCSN). In his spare time, he takes Aspen, a golden retriever, and Pepi, a standard poodle, for walks around the block. Canon cameras and an assortment of lens are among his favorite toys.

NEWS NOB

Published quarterly for all members of the Nevada Test Site Historical Foundation.

Editorial Committee: *Donald Wruble (Chairman), Wayne Bliss, Stuart Black, Loretta Helling, Robert Friedrichs, and David Jackson*

Layout and Graphics: *Sami Barrett*

NTS HISTORICAL FOUNDATION

The Nevada Test Site Historical Foundation was established on April 15, 1998, to establish, promote, and support a nuclear testing research center and exhibits for scientific, historical, educational, and charitable purposes.

The Foundation organizes volunteer services, acquires and donates monies, exhibit materials, and assists in land/building acquisitions for a Nevada Atomic Testing History Institute (NATHI). The NATHI will consolidate, preserve, and make accessible to the public historical and archival records, films, photographs, testing, and archaeological artifacts associated with the Nevada Test Site.

A PLACE TO HANG OUR HATS . . .

The NTS Historical Foundation's office space is provided by the NTS Development Corporation (NTSDC), thanks to the generosity of Tim Carlson.

The NTSDC is also providing a furnished office, including computer support, to the Foundation.

The office is staffed Tuesday through Thursday.

Our address is:

2330 Paseo del Prado
Suite C-101
Las Vegas, Nevada 89102

Telephone: (702) 257-7900
(ask for the Historical Foundation)

Fax : (702) 257-7999

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NTS History Center
(open noon-4 pm
Tuesday & Wednesday)

History Center Telephone:
(702) 295-1198
(702) 295-1190

Web Site

http://www.geocities.com/ntshistorical/

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churchbv@connett.net

The Role of Nuclear Testing (Continued from page 2)

until they worked and then other designs were bootstrapped from these successes, but also tested. This could not have been done without nuclear testing. Hence, the NTS and the dedicated workers who carried out these tests were critical to developing the U.S. stockpile.

What we did and did not accomplish with our testing.

Simply stated, the obvious accomplishment was development of the U.S. stockpile. However, it is interesting to trace the evolution of this accomplishment in more detail. The first weapons developed, and the first test at Alamogordo, in New Mexico, were BIG atomic bombs. These were one-stage fission devices of a few kilotons of yield, to be delivered by large aircraft. These constituted the WWII vintage weapon. Shortly after the war, the trend was to reduce the size of these atomic bombs to fit into smaller, faster planes, rockets, or artillery shells. The technological challenge was to reduce the size and weight by reducing the amount of high explosive, plutonium, uranium, etc., while still achieving a successful nuclear explosion. This size reduction was accomplished by conducting numerous tests with design variations and differing amounts of material and determining what worked and what didn't.

The next technological challenge was to develop the thermonuclear or "hydrogen" bomb with explosive yields of a thousand times greater than the atomic bomb, i.e., megatons.

The next technological challenge was to develop the thermonuclear or "hydrogen" bomb with explosive yields of a thousand times greater than the atomic bomb, i.e., megatons. This required a whole new concept of two physically separate stages, the primary and the secondary. Considerable testing was required to accomplish this feat. We also had to develop entirely new computer codes and approximations. No sooner was the thermonuclear device developed than the challenge to also make it much smaller and lighter was engaged. This led to being able to deliver nuclear warheads in smaller planes and eventually in the nose cones of intercontinental ballistic missiles (IBMs). As the weapons were made even smaller, the concept of putting several nuclear warheads into one missile, i.e., multiple-independent reentry vehicles (MIRVs), was achieved. This capability was a major escalation in the nuclear arms race between the Soviet Union and the United States.

A particular accomplishment in the effort to minimize the size and weight of nuclear weapons was to make powerful thermonuclear weapons small enough to be carried by submarines. This was a formidable task requiring considerable testing. This resulted in our submarine-launched Polaris warheads of the 1960's; and subsequently, our Triden: warheads developed in the 1980's which remain a major weapon in our stockpile today.

Another need for extensive testing at that time was the very high standard of nuclear safety the U.S. required of all weapons in our stockpile. This need to assure that a weapon could not be accidentally detonated, required the use of several new and less understood materials and processes: insensitive high explosive (IHE), which was harder to accidentally detonate but also more difficult to control and intentionally detonate; fire-resistant plutonium and uranium pits to assure stability in an accident and/or fire such as an aircraft crash; and very complex inhibitors to the system to prevent accidental or unauthorized detonation. All of this development of new weapons, two-stage weapons, smaller weapons, and the elaborate safety features within weapons, demanded considerable nuclear testing. During the 1960's and 1970's, we were conducting many tens of nuclear tests each year. This high frequency of testing allowed scientists to analyze the results of a test, and quickly change a few parameters and test again, and again, until successful. Very small changes sometimes resulted in dramatically different performance. For example, one test which was not supposed to perform much differently than a previous one, but did, was not understood until sometime later when someone remembered that a small piece of lead tape was stuck to the outside of the device on the firstest

but not the second. This seemingly trivial difference in the experiment had a significant and unanticipated impact on the weapon performance. Many tests were performed to measure the change in weapon performance due to only very small variations such as changes of only a few thousandths of an inch in the dimensions of one of the parts. Surprising performance differences were often observed.

Not all of the testing was associated with the research and development of new weapons. Many tests had to do with assuring the performance, or investigating concerns related to weapons already in the stockpile. Some examples were dramatic.

One example was the W80 Air Launched Cruise Missile (ALCM), which was just beginning to be loaded on B52s as part of our stockpile. This weapon used IHE as its explosive and the performance of this explosive is sensitive to temperature. Results of a test at the NTS surprisingly raised questions about this temperature sensitivity and showed that at certain temperatures the ALCMs would fail. Of course, ALCM production was stopped, and a design change was successfully tested. Production was then resumed and the weapon successfully integrated into the stockpile.

Another dramatic example was the W47, Polaris submarine-launched warhead. These weapons were also already in the stockpile and loaded on submarines around the world when it was suddenly discovered that a mechanical safety feature on this weapon would fail a large portion of the time and render the weapon useless. There was of course a redesign of the weapon, resulting in the use of a new primary stage that did not rely on the mechanical safety feature. This new primary was installed in all W47s, and the submarine fleet was put back into service. This redesign, of course, required testing at the NTS. Needless to say, this problem and its resolution was kept secret at the time.

Still another example of a weapon having a serious problem after it was already in the stockpile, and in this case not even discovered until much later, was the W52, Sergeant warhead, which the Army fielded as a rocket-delivered weapon. The Sergeant was in the field during the moratorium on nuclear testing from 1958 to 1961. During that period, there were two accidents at one of the laboratories involving the high explosive used in the Sergeant. A new high explosive was developed and put into the warheads, and the weapons were put back into the field for use. Scientists were quite confident the change was of no consequence to performance. Only after the moratorium was a nuclear test conducted at NTS, which showed that the new explosive would not work as expected and the Sergeant warhead would have failed if used.

These are just a few of the more dramatic examples of the need for nuclear tests to verify the performance of our weapons stockpile. There have been many more. In fact, over a third of the weapons in the stockpile have needed a nuclear test to identify or resolve problems.

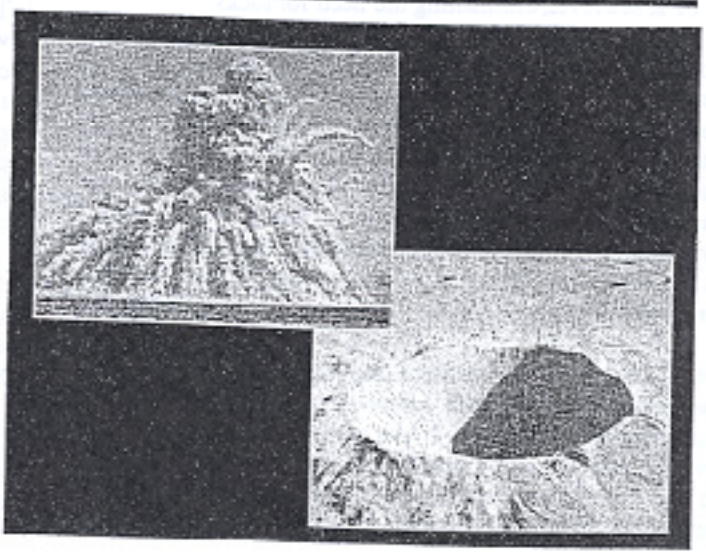
A final chapter in the story of what was accomplished with nuclear testing includes the succession of extremely complex underground tests that were carried out in the 1980s. There were two drivers for these complex tests. First, there was the prospect for directed-energy weapons, an effort to focus the energy of the explosion into a beam instead of having it go out in all directions. This offered the possibility of destroying a target far from where the explosion detonated, and was seen by some as the foundation of a viable missile defense, hence the Star Wars Program. The second driver was a major effort to better understand the details of what goes on inside a nuclear explosion, a similar goal to today's Stockpile Stewardship Program, but with the use of underground tests as opposed to being limited to laboratory experiments.

(Continued on page 11)

Anniversary Calendar Still Available

Copies of this year's Nevada Test Site 50th anniversary calendar are still available with 12 beautifully colored 8 1/2 -inch by 11-inch keepsake photographs of the Nevada Test Site. These photographs, such as the Sedan cratering experiment at the right, appear over monthly calendars carrying annotated dates of historical events that have occurred at the NTS.

See pages 1 and 13 for ordering information.



I REMEMBER . . . Atmospheric Nuclear Testing

Part 2

by Colin McKinlay

About the Author:
After obtaining his degree in journalism in 1951, Colin edited the weekly East Los Angeles Gazette for about 20 months before relocating to Las Vegas, Nevada, to work on the Las Vegas Sun newspaper, working a reporter's beat, operating the city desk, and editing copy. In 1957, he left the Sun to work at the Las Vegas Review-Journal. He covered the nuclear testing for the Sun and R-J, United Press International, Los Angeles Mirror, Deseret News, Hollywood Reporter, and the New York Times.

He left the R-J in 1969 to work for and then own a newsletter specializing in gambling information, finally ending up his career as editor of the weekly Las Vegas Business Press. He is now retired and living in Pine Valley, Utah.

[In the first installment of this article, the author recalled his observation of atmospheric nuclear testing from Angel's Peak in the Spring Mountain Range southeast of the Nevada Test Site, from the News Nob observation point on the Nevada Test Site, and from an aircraft flying over the Site.]

There was a time when the U.S. Atomic Energy Commission, or AEC, was advocating a program called Plowshare, the peaceful uses of atomic energy. To demonstrate its trenching capability, an underground test was detonated to see how much earth could be moved. The result was awesome. The crater was hundreds of yards across. One nuclear device had done the work of a score of digging machines, working for months.

One project frequently discussed was the use of nuclear devices to dig a trench across the Isthmus of Panama, to dig a new Panama Canal route from the Atlantic to the Pacific oceans. This new route would be at sea level, eliminating the need for locks.

A second project was a highway project. The [national] interstate highway [construction] project was only about a third finished. California was forced to relocate Route 66 into Interstate 40 between Barstow and Needles. This [nuclear excavated] route through the Bristol Mountains would have cut off some mileage and stranded the little settlements of Bagdad, Amboy, Danby, and Essex. Trouble was, the AEC misjudged the public. Opposition to using nuclear energy was building and the proposals were scrapped.

One of the strangest tests occurred one morning. We were viewing the shot at News Nob, where there was a bank of telephones for the media use. It was a tower shot [the nuclear explosive device placed on top of a tall steel tower] scheduled for pre-dawn. The sequence timer, which controlled the shot and activated all of the equipment at the proper moment, was connected to a speaker system so all could hear. The countdown went nine, eight, seven, six, five, four, three, two, one, zero . . . and nothing happened.

Most of those present were stunned. I had an open line to United Press in Los Angeles, and started describing the surroundings, the tension, the activity, and anything else that came to mind. We would find out later that a desert rodent got into the electrical circuitry and shorted out something crucial. Curiously, many of the media likened this gaff to a firecracker with a lighted fuse that you didn't know would pop or not.

The fact was since this was controlled by electrical impulses, once the power was shut down, there was no danger. Within a few hours, a couple of scientists were climbing the tower to find out what happened. Within a few days, the shot was rescheduled and went off.

We got major play on this test. Within a few days, a newspaper in France wanted a story on the shot that misfired, and they wanted it right now. We accommodated them. It took almost an entire day to punch the story on teletype tape, then transmit it overseas. We were paid handsomely for the effort.

Within a few days, a newspaper in France wanted a story on the shot that misfired, and they wanted it right now.

This way of life went on for nearly 10 years. Toward the end of atmospheric testing, the AEC had replaced the towers with balloons. They were able to get the balloons higher in the air, which resulted in less fallout. In these final months, I was offered a ride in an Air Force bomber to view a balloon detonation. Of course, I accepted.

The plane was the U.S. version of Britain's Canberra bomber, which had space for only the pilot and navigator. The pilot cautioned me that if I used the pop-up table to make notes, be sure and tell him first because bringing the table to the upright position made a sound like the plane's tail was falling off. Of course, in 20 minutes I had forgotten that warning and scared the daylights out of the pilot when I decided it was time to start taking notes.

Soon afterward, the test ban treaty went into effect, and thereafter, all of the shots were underground. There just wasn't any point in "covering" underground tests. Usually nothing happened. Occasionally, the ground surface would collapse.

There was one exception. A venting which had test site workers scurrying for safety. A good friend telephoned me from the test site to alert me of the incident. It was a major venting. Because

of my friend, I had a half-hour start on the story which was the banner in the home edition of the Los Angeles Times.

Years later, a friend asked me, "Do you really think all that testing was really necessary?"

For an instant I though of the evolution of the automobile, the airplane, and all of the nations that developed their own nuclear programs.

"Yes, I think it was," I told him.

The answer was accepted.

"FATHER OF THE ATOMIC BOMB" TO APPEAR AT JUNE 17 CHAUTAUQUA

Clay Jenkinson, considered the nation s leading interpreter of historical characters and one of the most dynamic public presenters in the United States, will perform at this year's Las Vegas Chautauqua, to be held June 14-17 at Hills Park.

This year's Chautauqua theme is "Looking Back at the Millenium." Mr. Jenkinson will portray English philosopher and writer Francis Bacon, a new character which he is unveiling at the Las Vegas event. He will also appear as nuclear physicist Robert Oppenheimer, the "father of the atomic bomb" as part of the Twentieth Century Perspectives segment on June 17, beginning at 6:30 in the evening.

Mr. Jenkinson is co-founder of the modern Chautauqua movement and has won numerous awards for his portrayals of Thomas Jefferson, Meriwether Lewis, and others. Although he is first and foremost a scholar, Jenkinson's public programs are always highly entertaining. The emphasis is always on dialogue with the audience, and he answers questions both in and out of character.

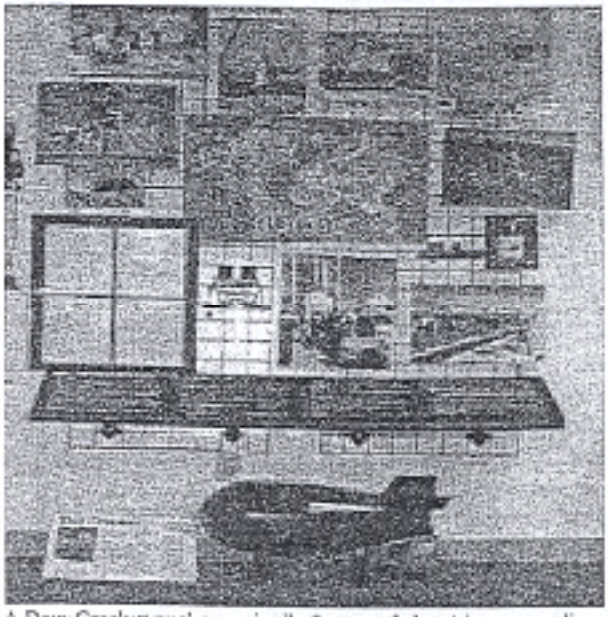
The Las Vegas Chautauqua is a program of the Nevada Humanities committee. Co-sponsors include the City of Las Vegas and the Howard Hughes Corporation. For information, call Kris Darnall in the Las Vegas office of the Nevada Humanities Committee at 895 1878.

On Loan — A Davy Crockett Projectile

There is a new addition to the NTS History Center collection. Thanks to the Bradbury Science Museum in Los Alamos, New Mexico, a Davy Crockett projectile is on a two-year loan.

The Davy Crockett weapons system consists of a projectile which is launched from a recoilless rifle. The Davy Crockett played a part in NTS history in 1962 during "Ivy Flats," a tactical military exercise, which involved live nuclear rounds fired from the Davy Crockett artillery piece.

The Army exercise was observed by the following dignitaries: U.S. Attorney General Robert Kennedy and General Maxwell Taylor, a Presidential military advisor. Participating in the exercise were members of the 4th Mechanized Infantry Division, Fort Lewis, Washington.



A Davy Crockett nuclear projectile (bottom of photo) is now on display at the NTS History Center, located at the intersection of Losee Road and Energy Way in North Las Vegas, Nevada.

Early AEC Manager Directed Building of Mercury

In August 1951, Seth Woodruff, Jr., was named manager of the Atomic Energy Commission, or AEC, field office in Las Vegas. As such, he was responsible for construction and operations at the Nevada Proving Grounds, later renamed the Nevada Test Site. That was no small task, because the AEC's role was to build an entire town that would be the "base camp" to support the nation's newly established on-continent atomic weapons testing program.

Woodruff, who died in March 1980, left a lasting legacy. He was one of the key people who were responsible for developing the town to be known as "Mercury." His daughter, Kay Eberl, who now lives in California, remembers well how proud he was of this accomplishment. She remembers that he talked about the naming of Mercury, but never did tell his family how the name was chosen. [Editors note. The Fall 1998 issue of the News Nob carries a story by Ernie Williams on the naming of Mercury, and the role of Seth Woodruff in that episode.]

In a recent letter to Joanne Thomas, NTSHF Office Manager, Kay Eberl expressed her support and appreciation for the efforts of the Foundation which she learned about by reading an article in a San Diego newspaper. After several inquiries, including a futile search on the Internet, she was disappointed that she couldn't locate any more information about the activities of the Foundation. Then, through contacts with former friends in Las Vegas, Kay Eberl found a former school mate, Joanne Thomas, who is working with the Foundation.

In her letter, Kay Eberl commented that she really enjoys reading the newsletter of the Foundation "particularly the article by the newspaper reporter during our years there. My dad took us and some of our friends out to one of those mountains he mentioned to watch one of the tests. It all seems unbelievable now."

Kay Eberl plans to be present at the opening of the Nevada Atomic Testing History Institute, in honor of her father. She has also joined the Foundation, and will be an active supporter.

Executive Committee Update . . .

Members of the NTSHF Executive Committee have been racing to keep up with the Foundation's rapid growth, with special focus on plans for the new NATHI facility and exhibit center. But that's just one important part of their busy agenda. Here are some highlights from the past few weeks:

After several weeks of active recruitment, President Bruce Church announced that DOE/NV Program Manager for Contractor Human Resources, **Bob Agonia**, has agreed to serve as the Foundation's Vice President. Bob brings a strong knowledge of the Nevada Test Site, having served with the program for over twenty-five years, and is also an involved member of the community. In addition, the position of Treasurer has been filled. **John Trujillo**, former Reynolds Electrical & Engineering Company budget manager, has agreed to serve in this important role.

Chairman Troy Wade has been active in establishing a Fund-Raising Committee which is focusing on short- and long-range strategies for obtaining financial assistance. Near-term funding priorities include support for exhibit design and construction, hiring a full-time Development Director to lead the capital campaign effort, and overall operating funds to implement an aggressive capital campaign. Longer range needs include acquisition of equipment and people to operate and maintain the exhibit center and gift shop. Potential sources for funding have been identified, and plans are underway to begin the capital campaign within the next few weeks.

Trustee Layton O'Neill is working hard to increase the number of volunteers to staff the NTS History Center located on Losee Road. The exhibits and gift shop at the Center is open for business only one day a week. As this is an important source of Foundation revenue, the Executive Committee's goal is to keep it open at least three days a week. This can't be done without an expanded volunteer base.

Trustee Ernie Williams has been managing the gift shop with his partner, **Phyllis Donaldson**, and has also put together a "traveling gift shop" for various special events and places. He has visited the Nevada Test Site twice, with impressive sales results. Ernie is also working on expanding the inventory, and is very involved in planning activities for the new gift shop.

Trustee Peter Zavattaro is developing a Foundation Business Plan that will describe the organization's purpose, current status and future plans, products and related services, marketing strategy, and mode of operations. The plan has been drafted and is being reviewed by the Board of Trustees. Peter hopes to finish the plan sometime in April. This is an important step in defining the organization for potential donors as well as the public. It is also an important step in defining needs and requirements for the design of the building and space planning.

Trustee Bill Flangas has agreed to serve as the Foundation's Membership Chair, and will work closely with **Office Manager Joanne Thomas** and the Board to implement a robust membership campaign. While membership has increased significantly over the past year, the Executive Committee is

committed to its goal of "1,000 by 2,000," which means a membership roster of one thousand by the end of this calendar year. Bill will also work with the Fund-Raising Committee on implementing an aggressive corporate membership campaign over the next few months.

The Executive Committee is very fortunate to have an active and committed group of *ex officio* members. They are representatives of the Department of Energy, its contractors and partners who are involved in assisting the Board but who do not have voting privileges.

Our current *ex officio* members include:

John Case, Desert Research Institute
Loretta Helling, DOE/Nevada Operations Office
Susan Haase, NTS Development Corporation
Elaine Mew, Bechtel Nevada
Darwin Morgan, DOE/Nevada Operations Office

Calendar Sales A Roaring Success

A big "thank you" to all the people who assisted in getting the word out and assisting the Foundation in selling the NTS 50th anniversary 2000 calendar. A number of individuals helped spread the word of calendar availability to groups far and wide that have been involved in NTS activities over the years. The project has been very successful, thanks to the enthusiasm and dedication of many people. The Foundation owes a special vote of thanks to Trustees Ernie Williams and Layton O'Neill, who spearheaded the sales campaign; and Retta Helling and Elaine Mew, our *ex officio* staff, who conceived the project and assured the publication of a quality product.

The following people went "beyond the call of duty" in assisting the Foundation with this project:

- Chuck Costa and Harry Jenkins, Los Alamos National Laboratory
- Nira McCoy, Sandia National Laboratories
- Don Felske, Becky Jeffries, Ken Giannotti, and Pasqualina Biancaniello, Lawrence Livermore National Laboratories
- Stephanie Patterson, National Nuclear Security Administration, DOE Headquarters
- Grace Plummer, DOE Headquarters
- G. Raffi Papazian, Jean Whitcomb, Kitty Spoeneman, Bennie Lee Kirtman, and Anna Ruth, Los Alamos National Laboratory
- Kitty Loughouser, Yucca Mountain Project
- Denise Langendorf, DOE Nevada Operations Office
- Jennifer Morgan, Bechtel Nevada
- Tony Sparks, National Atomic Museum Store (Albuquerque, New Mexico)
- Joanne Thomas, NTSHF Office Manager
- NTSHF Board of Trustees

Board of Trustee Changes

New Members:

Steve Liedle
John Case (*ex officio*)

Resigned:

John Mitchell
Marilou Jarvis (*ex officio*)

Volunteer History Center Attendants January—March

Jan. 5	Phil Allen
Jan. 12	Elmer and Jeanne Sowder
Jan. 19	Ed Beecher
Jan. 26	Melva and Layton O'Neill
Feb. 2	Phil Allen
Feb. 9	Ed Beecher
Feb. 16	Elmer and Jeanie Sowder
Feb. 23	Ernie Williams
Mar. 1	Phyllis & Jerry Donaldson
Mar. 8	Ed Beecher
Mar. 15	Elmer and Jeanie Sowder
Mar. 29	Nick Aquilina

Thanks to the following volunteers who have signed up for the rest of the year:

Tuesdays of each month:

1st	(to be filled)
2nd	(to be filled)
3rd	Ron Stearns
4th	Larry Crooks
5th	(to be filled)

Wednesdays of each month:

1st	Phil Allen
2nd	Beecher
3rd	Elmer and Jeanie Sowder
4th	Bob Clemenson
5th	(to be filled)

We wish to thank all the volunteers who have assisted in staffing the exhibits and Gift Shop in the NTS History Center each Tuesday and Wednesday. The volunteers are involved in opening, hosting (answering questions about displays and the NTS), sales of memorabilia in the Gift Shop, and closing the Center to visitors.

The History Center is open to the general public every Tuesday and Wednesday from 12 noon to 4 pm. If you haven't seen it, please come visit!

If you are interested in being a volunteer, please contact Layton or Melva O'Neill at 648-4144, or return the inserted form.

Best regards,

Melva and Layton O'Neill

(Layton serves as chair of the Volunteer Committee, with the full-time assistance of Melva.)

Recent History Center Acquisitions

On loan from volunteer Ed Beecher, is a copy of the 1953 Las Vegas High School yearbook. Thanks, Ed.

We would like to eventually have a 1953 Las Vegas High School yearbook donated to the collection. The cover of the yearbook shows a photo of "Able" the first test conducted at the NTS.

Recent donations include: two autographed copies of the book "Reflections of a Nuclear Weaponeer" from Frank H. Shelton, the author, and an Energy Research and Development Administration 10-year service pin donated by Eve Sparling.

Gift Shop Items Available

Items available in the NTS History Center Gift Shop (Building B-3 at the corner of Losee Road and Energy Way in North Las Vegas) include:

- Coffee mugs with the NTS Historical Foundation logo.
- Postcards: one with a photo of the Grable atmospheric nuclear test; and one of Fremont Street (downtown Las Vegas), circa 1950s, with an artist's drawing of an atomic test in the background.
- Video tapes: "Trinity and Beyond," "The Atomic Filmmakers," "Atomic Journey," and "Nukes in Space."
- Water bottles.
- 2000 NTS 50th Anniversary calendar.
- From the Test Ban Treaty Seminars: Badge lanyards and tote bags.

A gift shop order form is included in this issue for your use, if you wish to order by mail rather than take a trip to the gift shop.

Still Wanted

The following items are wanted for historical exhibits and displays. Both donations and loans are welcomed.

- Mannequins from 1950's era to portray civil effects tests at the NTS.
- 1953 Las Vegas High School Yearbook which has an atom symbol on the cover.
- Menu from the Mizpah Hotel in Tonopah, circa 1960s or early 1970s which has menu items like "atomic stew."
- Memorabilia representing past or present NTS activities, such as participant certificates, stickers, patches, and pins.
- Board games with an atomic theme; examples are "Nuclear War" and "Up An Atom – Game of the Atoms."
- Everyday items/memorabilia with an atomic theme; atomic beer, atomic cheese, etc.
- T-shirts or sport jackets from NTS or Pacific nuclear weapon test activities.
- Newspapers or magazines with front page headlines or articles about the Nevada Test Site or selected test sites from the 1950s to the present.
- Joint Verification Experiment 10th Anniversary Celebration memorabilia or gifts presented by representatives of Russia.

Contact: Loretta Helling at (702) 295-3372 or by e-mail at helling@nv.doe.gov

The Role of Nuclear Testing (Continued from page 5)

The Star Wars and the microphysics programs both demanded a revolution in the sophistication of the experiments carried out on nuclear tests at the NTS. Each test required the fielding of an underground physics laboratory with instrumentation that often exceeded the capabilities of any laboratory on earth. The precision of the measurements was unprecedented and the information learned was unimagined only a few years before. This was a proud time for the NTS and its people as they combined large-hole drilling, heavy engineering, high-tech precision engineering, and very sophisticated physics into an extremely successful nuclear weapon research program. Many believe this effort was a significant factor in the outcome of the Cold War. It is at this point in time, with the Cold War over, that our current moratorium on nuclear testing came into effect, and this work was terminated.

Hence, over its life span of 47 years, nuclear testing has successfully developed the world's most formidable and sophisticated nuclear weapons arsenal, has assured its continuing viability, and has made significant inroads toward understanding some of the esoteric physics and materials properties underlying nuclear explosions. However, in spite of these impressive accomplishments, that same 47 years of nuclear testing has still failed to provide scientists with sufficient knowledge and confidence to continue the certification of that stockpile, without those tests, for the indefinite future. Hence, the question: "Can we continue without further testing?"

This is the important question we are now facing, isn't it? We know that weapons will age, just like cars, ourselves, or anything else. We know that inside those weapons, plastics are being subjected to radiation from some of the nuclear materials, just like plastics in your car are subjected to the UV from sunlight. And we know what happens to the plastics in your car. We know that other materials are corroding, cracking, and deteriorating. What is happening to materials like the plutonium? And whatever is happening, how will that affect the performance of the weapon? These are questions to which scientists don't know all the answers today, but to which they must know the answers if they are going to certify the stockpile for the future. How will they get those answers without testing?

This is where the Science-Based Stockpile Stewardship Program (SSP) comes in. The plan is for the nation's weapons laboratories to build an array of the best experimental facilities in the world with which to conduct experiments to study the details of the physics and materials processes that occur in a nuclear explosion. These include the Dual Access Radiographic Hydrodynamics Test (DARHT) facility at LANL and the National Ignition Facility (NIF) laser facility at LLNL. The plan then calls for the scientists to use the data they obtain from laboratory experiments in those facilities, along with sophisticated new computer models they are developing, to be able sometime in the future to precisely predict the performance of a nuclear explosion. To develop these computer codes, they will have vastly more powerful computers at all laboratories, capable of 100 trillion calculations per second or more. The Lawrence Livermore National Laboratory already has the world's most powerful computer capable of three trillion calculations per second. To test the new codes they develop, with the new data they obtain in the laboratories, the scientists will attempt to go back and calculate the exact performance of all of our old nuclear tests, without the physics approximations. Once they can do that, then hopefully they can predict whether or not the changes they see in the aging of a weapon will cause it to fail or not, and certify the viability of our nuclear stockpile indefinitely.

Will this work? It's too soon to tell. Many scientists are confident, many are not. We already disassemble and inspect about 100 weapons each year, and experienced weapon scientists evaluate their condition. For each system we examine, we're finding one or two problems per year that require some sort of corrective action. This frequency of problems will most likely grow as the weapons age further. However, while this is happening, we are also completing the new experimental and computational facilities and training new scientists with new data, and passing on the expertise of experienced scientists. Will our new knowledge in the minds of new scientists outrun the increasing rate of problems that arise in the aging weapons, so as to keep us confident in our stockpile? The U.S. Congress is betting on it with about 4.5 billion dollars in support to the SSP each year, and the Laboratories are frantically racing against time to win that bet.

This work was performed under the auspices of the U.S. Department of Energy by the University of California Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

50th Anniversary Plans Underway!

On December 18, 1950, President Harry S Truman established the Nevada Proving Grounds, later renamed Nevada Test Site, as this nation's on-continent nuclear weapons testing area. Initially, the Nevada Proving Grounds consisted of 680 square miles, half its present size of 1,350 miles. The Nevada Test Site's place in history is marked by the 928 nuclear weapons tests conducted there.

In commemoration of the past 50 year history, several activities are planned throughout the year 2000. An NTS 50th anniversary traveling display is being developed with a completion date of late June. The multimedia display will have the capability to show films, showcase memorabilia, and display colorful graphics to highlight the major projects that have made the Nevada Test Site a major feature in the history of Nevada and the world. The display will be exhibited at libraries, at conferences, at U.S. Department of Energy headquarters, and at community events.

As the 50th anniversary date grows closer, NTS tour guides will elaborate on the 50-year history. Special signs are being developed to identify specific historic sites at NTS.

Special publications being developed include a revision of the popular historic issue of NTS News and Views, a newsletter of federal and contractor employees of the Department of Energy. A new full color "Guide to Frenchman Flat" booklet is available at the NTS History Center and a "Guide to Yucca Flat" is being written. A nostalgic view of the NTS in the 1950s, produced by the DOE headquarters historian in collaboration with the Foundation, will be available in December. A complete history in a bound coffee table book format will be available late 2001.

A 50th anniversary logo contest was conducted November 1999 with entries submitted by DOE and contractor employees. The logo will appear throughout the year on various written and retail products.

Videotaping of oral histories are underway. The DOE/NV is working with the Bechtel Nevada video staff to conduct these interviews. A 50th anniversary documentary is a possible product from this effort.

A Chautauqua, with Professor Noel Pugach from the University of New Mexico portraying President Harry S Truman, is tentatively scheduled to coincide with the Declassified Film Festival scheduled for November 8 at the main Clark County Library on Flamingo Road in Las Vegas, Nevada.

A groundbreaking ceremony is planned for November/ December 2000 at the site for the Nevada Atomic Testing History Institute, on the grounds of the Desert Research Institute in Las Vegas, Nevada. The formal announcement of the Foundation's affiliation with the Smithsonian Institute will be part of the programmed events.

NATHI Building Plans Progress

The Desert Research Institute, DOE/Nevada Operations Office, and GSA are continuing to work closely with the building and exhibit architects and the space planning team to develop the detailed design of the new Nevada Atomic Testing History Institute (NATHI).

Some refinements to the NATHI building design are being made to comply with the established budget. Initially, the design included a mezzanine that would house the public reading room, but this caused the building to be considered a four-story structure, with building and fire code requirements exceeding budget constraints. The General Services Administration has provided space planners to assist in refining the design based on the program requirements. Once the refinements have been approved by all parties, the next phase of the building design will proceed.

The exhibit designers of J.J. Andre and Associates, Ltd., are being contacted in preparation to proceed with the next phases of the exhibit design. Their involvement in the project is a critical component as their work will parallel the building design as it progresses.

Tentative plans, pending any crucial schedule delays, are to have the NATHI groundbreaking ceremony during November/ December 2000, to coincide with the 50th anniversary of the establishment of the Nevada Test Site.

NTS HISTCRICAL FOUNDATION
ORDER FORM

NAME _____

ADDFESS _____

CITY _____ STATE _____ ZIP _____

T-shirts **$12.00 EACH**

Fireball Logo - small shoulder imprint

Sizes:	Quantity
Small	_____
Medium	_____
Large	_____
Ex-large	_____
2xlarge	_____
3xlarge	_____

Fireball Logo - large fron: imprint

Small	_____
Medium	_____
Large	_____
Ex-large	_____
2xlarge	_____
Exlarge	_____

Fireball Logo - large back imprint w/frcnt pocke:

Small	_____
Medium	_____
Large	_____
Ex-large	_____
2xlarge	_____
3xlarge	_____

NTS Historical Foundation T-shirts $12.00 each

NV and NTS outline - small shoulder imprint

Medium	_____
Large	_____
Ex-large	_____

NV and NTS outline - large imprint on back w/front pocket

Medium	_____
Large	_____
Ex-large	_____

Caps **One size fits all** **$5.00 each**

Fireball Logo Imprint	_____
NV and NTS Outline Imprint	_____

(THERE'S MORE-SEE REVERSE SIDE)

Foundation Members Needed/Wanted

So much has been accomplished, but the Historical Foundation is losing new membership momentum. Additional membership is badly needed to help keep the Foundation functioning.

As of March 31, 2000, there were 300 individual and corporate members of the Foundation. We have a long way to go to reach our goal of 1,000 members by the end of year 2000.

All members are asked to "spread the word" about the important work of the Foundation and to encourage membership. Members are encouraged to provide mailing lists of interested friends and associates to the NTS Historical Foundation, 2030 Paseo del Prado, Suite C-101, Las Vegas, Nevada 89102.

Join Us

Annual membership in the Nevada Test Site Historical Foundation is open to anyone interested in preserving the history of the Nevada Test Site.

All members will receive a membership card, newsletter, and invitations to special events and tours.

MEMBERSHIP LEVEL	ANNUAL DUES
Individual	$ 25
Family	$ 50
Sustaining	$100
Corporate	$500

Your tax-deductible contribution will be used to support the development of exhibits.

For information on membership, contact the Foundation office at (702) 257-7900.

If you would like more information or would like to volunteer on a committee, please contact Bruce Church at (702) 398-3910.

VOLUNTEER

How can you get involved with the Nevada Test Site Historical Foundation?
Volunteer to help with:

marketing	- call Layton O'Neill, (702) 648-4144 or Ernie Williams, (702) 870-2243
staffing the NTS History Center retail sales (gift shop, etc.)	- call Layton O'Neill, (702) 648-4144
grant writing	- call Phyllis Marin, (702) 658-4679

WELCOME NEW MEMBERS!

A list of corporate members appears below. Individual, family, or sustaining members joining the Foundation since we published the new member list in the last issue of the *News Nob* are listed on the right.

Current corporate members are:

JMA Architecture Studios
SAIC Corporation
PAI Corporation
Bechtel Nevada
NTS Development Corporation
Desert Research Institute
Wackenhut Services, Inc., NV
IT Corporation

New Individual, Family (F) and Sustaining (S)

Kenneth Garey
Duane Hall
Frank Beers, III
Millison & Billy Cook (F)
Harold Rarrick
Ted Allen
Jerry Young
Thomas & Annie-Claude D'Agostino (F)
Ronald Cosimi (S)
Don Offe
Chris Hagen
Kay & Jack Eberl (S)
Richard Rockchester
William Bishop (S)
Dominic Monetta (S)
Robert & Marilyn Kuckuck (S)
Allen Brodsky
Steve & Bethany Wells (F)
Sheila (Schramm) Kerfoot
Steve Younger
Mary White
Claude Cooke (S)
Charles Phillips
Sherry Herman

A MEMBERSHIP FORM FOR YOU TO CUT OUT AND MAIL IS LOCATED ON THE LAST PAGE OF THIS NEWSLETTER!

Nevada Test Site Historical Foundation
2330 Paseo del Prado, Suite C-101
Las Vegas, NV 89102

Bulk Rate
U. S. Postage Paid
Las Vegas, NV
Permit #2528

NTS Historical Foundation Membership Form

NAME(s) or COMPANY/CORPORATION:

ADDRESS:

CITY:

STATE: ZIP:

TELEPHONE:

FAX:

E-MAIL

MEMBERSHIP CATEGORY (check one)

- ☐ INDIVIDUAL $ 25
- ☐ FAMILY $ 50
- ☐ SUSTAINING $100
- ☐ CORPORATE $500

- ☐ Historical items to loan or donate?
- ☐ Volunteer as a docent or gift shop attendant at the NTS History Center?

Mail this form and a check payable to:

Nevada Test Site Historical Foundation
2330 Paseo del Prado, Suite C-101
Las Vegas, NV 89102

Comments/Suggestions: